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## VIEWPOINT

# The Role of Digital Competence in CME Uptake: A Short Communication

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**ABSTRACT**

The digitisation of society has reached almost every facet of our daily lives. The COVID-19 pandemic has further showcased the role of information and communications technology (ICT) in society and so much so in continuing medical education (CME). This has provided the CME industry with remarkable opportunities to design better educational programmes and reach more audiences. However, for healthcare professionals to take full advantage of these developments, they need to be digitally competent, at least at a basic level. While digital competence influences CME uptake in the internet age, several factors, in turn, can influence digital competence. These factors come from both within and outside the influence of healthcare professionals and educators. In this article, we explore how digital competence influences CME uptake and recommend ways to improve digital competence among healthcare professionals.

## Introduction

Lifelong learning is crucial in ensuring quality healthcare and involves knowledge application, skills development and attitudinal change [1]. Over the last few decades, information and communications technology (ICT) has played an increasing role in our daily lives. The consequent digitisation of society and the increased demand for digital competence have significantly impacted many professions, not least the healthcare profession [2].

In the continuing medical education (CME) industry, in particular, advances in ICT have brought remarkable opportunities to design better educational programmes and reach wider audiences [3]. The COVID-19 pandemic has magnified the role of digitisation in our lives, including in education. This trend in CME is likely to continue beyond the pandemic, especially with the growing evidence that online training is at least as effective as in-person training [4,5] and is applicable in many fields of medicine. To take full advantage of these developments, however, healthcare professionals need a certain level of digital competence.

Consequently, developing digital competence has become essential in healthcare professions, with regulators stipulating more required digital skills as a condition for registration into healthcare professions [6,7]. This article explores how digital competence influences CME uptake and recommends ways to improve digital competence among healthcare professionals.

## Digital Competence

The European Parliament, in a recommendation on key competencies for lifelong learning, cites digital competence as one of eight key competencies considered of equal importance contributing to a successful life in a knowledge society [8]. More recently, the European Commission wrote in its communication A Digital Agenda for Europe that "The digital era should be about empowerment and emancipation; background or skills should not be a barrier to accessing this potential". Although the past decade has witnessed a remarkable improvement in internet access in the 27 member states of the EU, one out of every ten people still does not have access [9]. As such, digital competence is a term that seems to be still emerging and is not yet precisely defined [10].

Digital competence was broadly described by Heidari et al. [11] as "the skill of using digital technologies effectively and the ability to critically analyse online information". It has so far been studied through several frameworks; one proposed by Calvani et al. [12,13] includes three dimensions: technical skill (comprising visual literacy, an understanding of technological concepts, and operative knowledge to solve common technological problems); cognitive skill (including high-order cognitive skills allowing the user to interpret, evaluate, and organise the data); and ethical knowledge (concerning the ability of the user to interact with others via digital media and the effects of

those interactions on their sense of online responsibility and citizenship) [11].

As the digital revolution has taken hold, the potential educational benefits of digital technologies have become apparent; so too has the consequent need for a level of digital competence to facilitate this. For educators, adopting digital technologies can offer new ways of engaging learners and better accommodating their educational needs [10], but "requires that educators become lifelong learners who are willing to contend with ambiguity, frustration and change" [14]. From the learner's perspective, Shonfeld et al. [10] write that even young learners, often described as "digital natives", may develop only basic procedural skills rather than high-level skills, due to the ramifications of factors including economic issues; indeed, the higher the level of socioeconomic development in a country, the higher the level of literacy and confidence in using computers [10].

## Factors Influencing Digital Competence

The critical factors determining acceptance of digital learning are the same factors that influence the acceptability of any educational programme for adult learners – interactivity, flexibility, and accommodation of various learning styles and motivations [15]. In addition, a European study involving 47 general medical practitioners identified a lack of digital competence as a major barrier to accessing CME programmes [16].

Similar to the framework proposed by Calvani et al. for assessing digital competence, in a Delphi study involving 95 experts from multiple sectors in Europe and beyond, Janssen et al. [17] concluded that digital competence encompasses three key components: knowledge, skills and attitudes. The authors also identified 12 building blocks that make up the components. These include general knowledge and functional skills, use in everyday life, specialised and advanced competence for work and creative expression, technology-mediated communication and collaboration, information processing and management, privacy and security, as well as legal and ethical aspects. The other building blocks are: balanced attitude towards technology, understanding and awareness of the role of ICT in society, learning about and with digital technologies, informed decisions on appropriate digital technologies, and seamless use demonstrating self-efficacy.

In addition, the European Commission's Digital Competence Framework for Citizens describes five digital competencies, including information and data literacy, communication and collaboration, digital content creation, safety and problem-solving [18].

There is a paucity of data on the factors influencing digital competence among healthcare professionals specifically. However, given the complex components of digital competence, it is our view that digital competence, including among healthcare professionals, can be influenced by several factors. Moreover, studies involving other professionals, including education professionals, indicate that age, experience, gender and level of education all play a role in determining the level of digital competence among professionals [19–21]. Generally, younger, more educated, female professionals with experience in digital technologies tend to be more digitally competent than others in the same profession. However, in a study of 94 pharmacists in Scotland, MacLure & Stewart [22] reported a basic level of digital competence among the participants but did not find the above factors to influence digital competence. This evidence may not be enough to suggest that healthcare professionals are different from all other groups of professionals.

## How Digital Competence Affects CME Uptake

Using digital technology makes it possible to make education more accessible by overcoming barriers such as disability or socioeconomic disadvantages. In our practice, due to the COVID-19 pandemic, our educational programmes are now delivered 100% virtually. However, to achieve this, the target audience must have at least a basic level of digital competence.

Developing digital skills is essential for both learners and educators to fully take advantage of such benefits of digital technologies [10,23]. In the context of CME, a 2016 survey of 164 pharmacists found that their internet self-efficacy was a significant predictor of self-regulated learning through online continuing education [24]. Digital competence is also crucial for educators. One study found that the implementation of technology by teachers depended on how highly they valued their own digital competencies, as well as their attitudes to the implementation of such technologies [23].

The social isolation and ban on in-person meetings caused by the COVID-19 pandemic have made access to digital resources such as e-learning even more critical for meeting educational needs [25]. It has forced educators to move many CME activities to digital environments, thus providing an invaluable opportunity to assess the impact of such a change. Kawczak et al. [26] described, in a retrospective observational study, the adaptation of the entire continuing education programme of the Cleveland Clinic in the USA, and found that participation in virtual activities was

significantly greater than pre-pandemic live, in-person activities. The authors also pointed out that the extent to which virtual activities will return to pre-pandemic methods remains unclear. As such, the need for digital competence in CME is unlikely to become any less important in the near future.

Another study of Iran-based university students during the COVID-19 pandemic [11] found that digital competence was positively correlated not only with academic engagement but also with informal digital learning, described as self-controlled, self-directed learning that is not usually classroom-based or directed through formal educational institutions. The importance of digital competence to allow uptake of digital technologies in nursing education was further described by Meum et al. [27] in a qualitative study, which highlighted the benefits of using digital educational platforms.

## Improving Digital Competence

Engaging and supporting healthcare professionals to improve their digital literacy is key to embracing greater access to technology in healthcare practice. This will, in turn, provide the opportunity to improve the quality of care for better health outcomes [22]. Given the components of digital competence and the factors influencing it, as discussed above, the approach most likely to succeed will involve training healthcare professionals to improve their digital competence. This should start from pre-service and address gaps among in-service professionals. It is also crucial that healthcare professionals have the opportunity to use those skills at work. While these solutions may be realistically applicable to pre-service schools and even healthcare management, the CME industry also plays a significant role.

The educators' responsibility is to invest time and resources to ensure that our educational programmes are designed to be user-friendly, easy to follow, and, crucially, are compatible with the human learning process [4].

## Conclusion

To support the much-advocated principles of lifelong learning in healthcare while coping with the increasing demands for care, healthcare professionals must acquire at least basic digital skills. These skills will enable them to take advantage of digital educational resources and the flexibility they offer. On the other hand, educators must ensure that educational programmes align with human learning processes and take advantage of the wide reach that digital learning offers.

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